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**U.S. EPA COMMENTS ON THE WASTE PITS 3
AND 5, AND CLEARWELL DIKES STABILITY
ANALYSIS REPORT**

02-19-92



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 5
77 WEST JACKSON BOULEVARD
CHICAGO, IL 60604-3590

2905

FEB 19 1992

REPLY TO THE ATTENTION OF:

Mr. Jack R. Craig
United States Department of Energy
Feed Materials Production Center
P.O. Box 398705
Cincinnati, Ohio 45239-8705

HRE-8J

RE: U.S. EPA Comments on the Waste
Pits 3 and 5, and Clearwell
Dikes Stability Analysis Report

Dear Mr. Craig:

The United States Environmental Protection Agency (U.S. EPA) has completed its review of the Waste Pits 3 and 5, and the Clearwell Dikes Stability Analysis report.

Enclosed are U.S. EPA's comments on the report.

Please contact me at (312/FTS) 886-0992 if you have any questions.

Sincerely,

James A. Saric
Remedial Project Manager

Enclosure

cc: Graham Mitchell, OEPA-SWDO
Pat Whitfield, U.S. DOE-HDQ

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TECHNICAL REVIEW COMMENTS**WASTE PITS 3 AND 5 AND CLEARWELL DIKES
STABILITY ANALYSIS REPORT**GENERAL COMMENTS

1. The report is a good summary of the field investigation, geotechnical laboratory testing, and slope stability analysis for Waste Pits 3 and 5 and clearwell dikes at Operable Unit 1 at FEMP in Fernald, Ohio. The geotechnical investigation is thorough, and the method of analysis is appropriate. However, the high ground-water table with earthquake loading should be analyzed by DOE in addition to the three cases analyzed in the Stability Analysis Report to ensure that the dikes will remain stable even under low probability natural hazards.
2. Sand lenses were encountered during the geotechnical field investigation. These lenses do not appear in the typical cross-sections analyzed in the report. Saturation of these sand lenses will increase pore pressure within the embankment, and adversely affect embankment stability. Therefore, all cases should be reanalyzed to properly account for the sand lenses within the embankment.

SPECIFIC COMMENTS

1. Section 2.3.5, Page 2-6: The low ground-water table case (Case 1) assumes seepage through the dike with a steep hydraulic gradient to a ground-water elevation near the top of the aquifer. This assumption is not justified, because the geotechnical field investigation indicated the presence of silty sands within the dike at depths of (1) 10 to 17 feet and 22 to 28 feet below ground surface in Waste Pit 5; (2) 3.5 to 6 feet and 12 to 14 feet below ground surface in Waste Pit 3; and (3) 11.5 to 13.5 feet below ground surface in the Clearwell Dikes. U.S. EPA recommends that the phreatic surface in the dikes reflect the presence of these silty sands.

2. Section 3.1.3, Page 3-1: The text states that ground water encountered at Waste Pit 5 is perched, typical of ground water encountered in the glacial till throughout the site. However, the presence of perched ground water is not reflected in the low ground-water and earthquake loading cases analyzed in the report. These cases should be reanalyzed with consideration to the presence of perched ground water.
3. Section 4.2, Page 4-4: The effect on safety of a flatter Waste Pit 3 exterior slope is presented in Table 4-1. Considering the critical nature of waste pits, U.S. EPA recommends that the flatter 2.5:1 exterior slope be adopted for Waste Pit 3 to ensure stability in the event of a long duration, high intensity rain storm or an earthquake.
4. Section 5.0, Page 5-1: Recommendation 7 states "If in-place remediation is selected as the final remedial action for Waste Pit 3, employ an engineering design measure to increase the dike's long-term stability in the event of an earthquake." This sentence is vague. U.S. EPA recommends that the engineering design measure should be specified, and the exterior slope of Waste Pit 3 should be flattened to 2.5:1 if in-place remediation is selected as the final remedial action.